

What is Claimed is:

1. A light generating module comprising:

a semiconductor light-emitting device;

5 a monitoring light-receiving element provided so as to be optically coupled to said semiconductor light-emitting device;

a driving element for driving said semiconductor light-emitting device; and

10 a housing having first, second, and third regions arranged sequentially in a direction of a predetermined axis, said housing containing said semiconductor light-emitting device, said driving element and said monitoring light-receiving element therein;

15 wherein said semiconductor light-emitting device is located in said first region, said driving element is located in said second region, and said monitoring light-receiving element is located in said third region.

20 2. The light generating module according to claim 1, further comprising:

a first mounting member having first, second, and third regions arranged sequentially in a direction of a predetermined axis; and

FP02-0042-00

a second mounting member, located in said third region of said mounting member, having a support surface;

5 wherein said monitoring light-receiving element is provided on said support surface;

wherein said monitoring light-receiving element has a light-detecting region for detecting light;

wherein said driving element is provided on said second region of said first mounting member;

10 wherein said semiconductor light-emitting device is provided on said first region of said first mounting member;

15 wherein said semiconductor light-emitting device has a pair of end surfaces and an active layer, said active layer extending from one of said pair of end surfaces to the other thereof;

wherein a region provided by said housing are divided into first and second sections by a plane extending along said active layer;

20 wherein said monitoring light-receiving element has a light-detection region provided in said first section; and

wherein said driving element is provided in said second section.

25 3. The light generating module according to claim 1, further comprising:

FP02-0042-00

a first mounting member having first, second and third regions arranged sequentially in a direction of a predetermined axis; and

5 a second mounting member having a support surface and provided in said third region of said mounting member;

wherein said monitoring light-receiving element is provided on said support surface;

10 wherein said monitoring light-receiving element has a light-detecting region for detecting light;

wherein said driving element is provided on said second region of said first mounting member;

15 wherein said semiconductor light-emitting device is provided on said first region of said first mounting member;

wherein said semiconductor light-emitting device has a pair of end surfaces and an active layer, said active layer extending from one of said pair of end surfaces to the other thereof;

20 wherein a region provided by said housing are divided into first and second sections by a plane extending along said active layer;

25 wherein said monitoring light-receiving element has a light-detection region including first and second portions, said first portion being provided in

said first section, and said second portion being provided in said second section; and

wherein said driving element is provided in said second section.

5                   4. The light generating module according to claim 1,

wherein said housing has a plurality of side walls;

10                   wherein said monitoring light-receiving element is positioned between said driving element and one side wall of said plurality of side walls;

said light generating module further comprising a substrate provided between one side wall of said housing and said driving element; and

15                   wherein said substrate has transmission lines for transmitting modulation signals to said driving element, said transmission lines being connected electrically to said driving element.

20                   5. The light generating module according to claim 4, wherein said transmission lines are provided on a surface of said substrate, said surface being made of AlN material.

25                   6. The light generating module according to claim 4, wherein said transmission lines include microstrip lines.

7. The light generating module according to claim 4, wherein said transmission lines include coplanar lines.

5 8. The light generating module according to claim 4, wherein said second mounting member is provided on said substrate, and said second mounting member is located apart from said transmission lines.

10 9. The light generating module according to claim 1, further comprising an optical fiber having an end coupled optically to said semiconductor light-emitting device, said optical fiber being provided in a direction of said predetermined axis and.

15 10. The light generating module according to claim 1, wherein said semiconductor light-emitting device includes an optical integrated laser element, said optical integrated laser element including an optical modulator and a semiconductor laser.

20 11. The light generating module according to claim 9, wherein said semiconductor light-emitting device includes a semiconductor laser element.

12. The light generating module according to claim 1, further comprising:

25 a first mounting member provided in said housing and having first, second, and third regions arranged sequentially in a direction of said predetermined axis; and

a second mounting member provided in the third region of said first mounting member;

wherein said monitoring light-receiving element is provided in said third region of said first mounting member;

wherein said driving element is provided in said second region of first mounting member; and

wherein said semiconductor light-emitting device is provided in said first region of first mounting member.

13. The light generating module according to claim 1, wherein said semiconductor light-emitting device has a pair of end surface;

wherein said second mounting member has a support surface, said monitoring light-receiving element being mounted on said support surface;

wherein said monitoring light-receiving element has a light detection region for detecting light; and

wherein said light-detection region faces one of said pair of said end surface of said semiconductor light-emitting device.

14. The light generating module according to claim 13, further comprising an optical fiber optically coupled to the other of the pair of end surfaces of said semiconductor light-emitting device.

15. The light generating module according to claim 1, further comprising:

a first mounting member having first, second, and third regions arranged sequentially in a direction of said predetermined axis;

a substrate provided in said third region of said first mounting member;

a second mounting member provided in said substrate;

wherein said substrate has wirings thereon for transmitting modulation signals to said driving element, said wirings being connected electrically to said driving element;

wherein said monitoring light-receiving element is provided on said second mounting member so as to be provided on said wirings;

wherein said driving element is provided in said second region of said first mounting member; and

wherein said semiconductor light-emitting device is provided in said first region of said first mounting member.

16. The light generating module according to claim 1, further comprising a substrate provided in said third region of said housing;

wherein said substrate has a pair of wirings thereon for transmitting differential modulation

signals to said driving element, said pair of wirings being connected electrically to said driving element; and

5 wherein said driving element processes said differential modulation signals to produce a single drive signal for said semiconductor light-emitting device.

10 17. The light generating module according to claim 16, further comprising a mounting member provided on said substrate,

wherein said monitoring light-receiving module is mounted on said mounting member so as to be provided on said wirings.

15 18. The light generating module according to claim 1, further comprising a substrate having a primary surface, said substrate being provided in said third region of said housing;

20 wherein said primary surface of said substrate has a pair of wirings for transmitting modulation signals to said driving element, said pair of wirings being connected electrically to a pair of electrodes on an element surface of said driving element, respectively; and

25 wherein the height of said primary surface of said substrate is lower than the height of said element surface of said driving element.

FP02-0042-00

19. The light generating module according to claim 1, wherein said housing has a plurality of wall portions and a plurality of lead terminals;

5 wherein said light generating module further comprises a substrate provided between said driving element and one of said plurality of wall portions; and

10 wherein said substrate has a pair of wirings for transmitting differential modulation signals to said driving element, and each transmission line has one end electrically connected to said driving element and another end electrically connected to one lead terminal of said lead terminals.

15 20 The light generating module according to claim 19, wherein said substrate has a pair of sides, one side being opposed to the other side;

wherein each wiring extends from one side of said pair of sides to the other side thereof; and

20 wherein said one side of said pair of edges faces said driving element and said other side thereof faces one wall portion of said wall portions, said wall portion having said plurality of lead terminals.